CREDIT RISK MANAGEMENT IN THE TURKISH BANKING SECTOR : A SURVEY STUDY

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ABSTRACT

Credit risk is the oldest risk form in financial markets and credit risk management has formed the core of banks' expertise. New approaches in credit risk measurement and new tools in credit risk management have been developed during the years. In this article we explain the results of a survey which was done for evaluating credit risk management applications in the Turkish banking sector.

Keywords : Credit risk, credit risk management, Turkish banking sector.

ÖZET

Kredi riski, finansal piyasalardaki en eski risklerden biridir ve kredi riski yönetimi, bankaların uzmanlık alanlarından birini oluşturmaktadır. Zaman içerisnde, kredi riskinin ölçülmesinde ve kredi riskinin yönetiminde yeni yaklaşımlar ve araçlar geliştirilmiştir. Bu makalede, Türk bankacılık sektöründe kredi riski yönetimi uygulamalarını değerlendirmek için, bankacılık sektörüne uygulanan anketin sonuçlarına yer verilmiştir.

Anahtar Kelimeler : Kredi riski, kredi riski yönetimi, Türk bankacılık sektörü.

1. INTRODUCTION

Credit risk is the oldest and important risk which banks exposure and important of credit risk and credit risk management are increasing with time because of some reasons like economic crises and stagnation, company bankruptcies, infraction of rules in company accounting and audits, growth of off-balance sheet derivatives, declining and volatile values of collateral, borrowing more easily of small firms, financial globalisation and BIS risk-based capital requirements.

Credit risk can be defined as the risk of losses caused by the default of borrowers. Default occurs when a borrower can not meet his financial obligations. Credit risk can alternatively be defined as the risk that a borrower deteriorates in credit quality. This definition also includes the default of the borrower as the most extreme deterioration in credit quality. Credit risk is managed at both the transaction and portfolio levels. But, banks increasingly measure and manage the credit risk on a portfolio basis instead of on a loan-by-loan. In credit risk management banks use

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various methods such as credit limits, taking colleteral, diversification, loan selling, syndicated loans, credit insurance, securitisation and credit derivatives.

In Turkish banking sector, credit risk has an importance place. But, credit risk measurement and credit risk management are not to be in desired level. For evaluating credit risk management applications in the Turkish banking sector, a survey was done and results of the survey were explained in this study.

2. THE GOAL AND SCOPE OF THE SURVEY

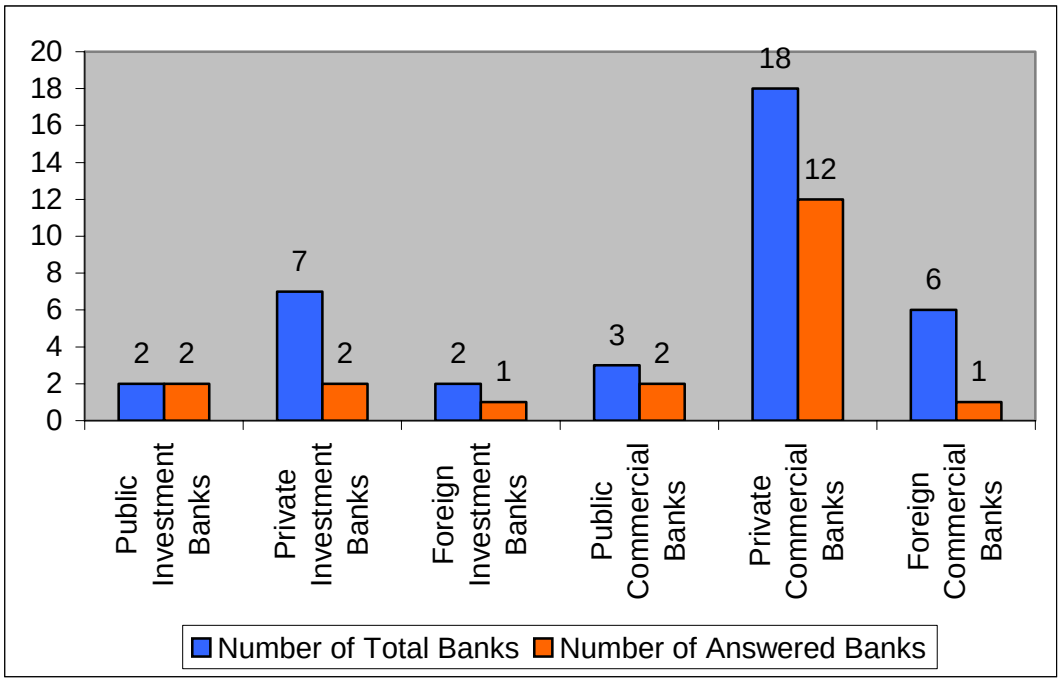
The main purpose of this survey is to evaluate credit risk management applications and to determine shortcomings. The survey comprises national and foreign commercial banks and investment-development banks which were established in Turkey. There were 48 banks in Turkey by date of January 2005. Of the 48 banks, 35 were commercial banks and 13 were investment and development banks. 3 of the commercial banks were state-owned, 18 of them were privately owned, 13 banks were foreign banks and the rest 1 bank was under Savings and Deposits Insurance Fund (SDIF). 3 of the development and investment banks were state-owned while 8 of them were privately owned and the remaining 2 were foreign banks. The Istanbul Stock Exchange (ISE) Clearing Bank, seven foreign banks which was opened a branch in Turkey, the bank which was transferred to SDIF and the Bank of İller were exempted from the scope of survey. Therefore 38 banks constituted the scope of survey.

3. THE METHOD AND RESPONSE RATE OF THE SURVEY

The questionnaire was comprised of 16 questions. The questionnaire was sent to risk management managers or credit risk management managers of banks by e-mail and fax. Also face-to-face negotiation was made with three banks. The survey was made between January 3, 2005 and February 15, 2005.

20 banks answered to questionnaire so that response rate of survey was 58%. The type of banks that was sent questionnaire and answered to the questionnaire are shown in Figure 1.

Figure 1 : Number of Total Banks and Answered Banks



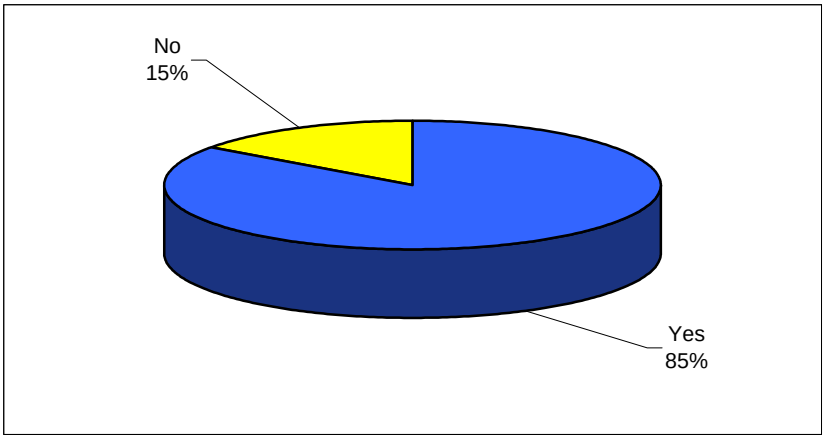
Total assets of the banks that answered to the questionnaire was $147,7 billion and share of the assets in total banking sector assets was 83% by end of 2003. Total loans of the banks that answered to the questionnaire was $38,2 billion and share of the loans in total banking sector loans was 81% by end of 2003. Total deposits of the banks that answered to the questionnaire was $92,4 billion and share of the deposits in total banking deposits was 84% by end of 2003.

4. FINDINGS

4.1. Credit Risk Management Sub-Unit

There must be a risk management unit or division in the banks for legally in Turkey. But, there is not a legal obligation for credit risk management sub-unit. Therefore the first question in the survey asks banks whether they have a credit risk management sub-unit under risk management unit. 85% of the banks said that there was a credit risk management sub-unit under risk management unit and 15% of the banks said that there wasn't a credit risk management sub-unit as seen in Figure 2.

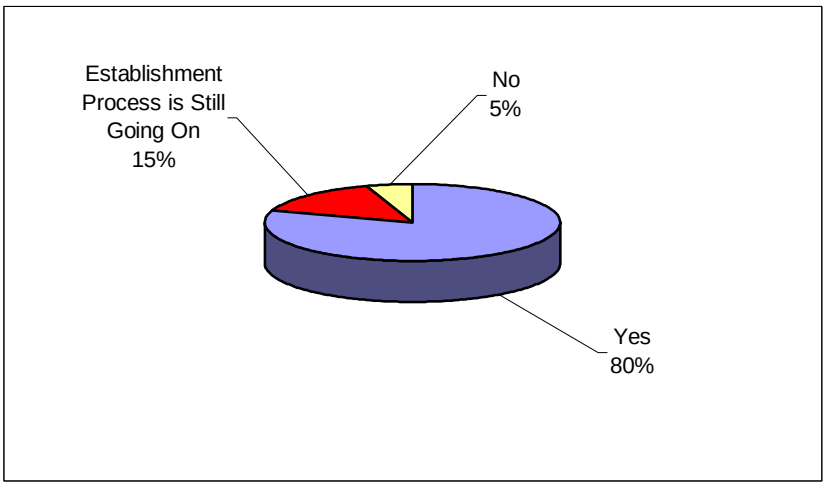
Figure 2 : Existing of Credit Risk Management Sub-Unit



4.2. Establishment of A Written Credit Risk Policy

Banks should establish a written credit risk policy which explains objectives and principals of credit risk management process. As seen in Figure 3, 80% of the banks said that there was a written credit risk policy in their banks, 15% of the banks said that establishment of a credit risk policy process was still going on and 5% of the banks said that they had no a written credit risk policy.

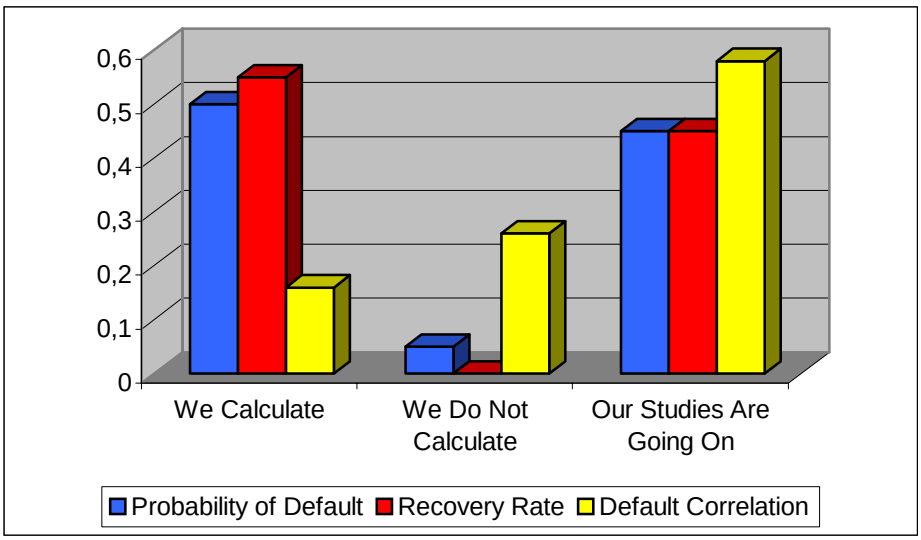
Figure 3 : Establishment of A Written Credit Risk Policy



4.3. Data About Borrowers and Loans

Probability of default (PD) is one of the most important inputs which is used in credit risk measurement. According to the survey, %50 of the banks calculate probability of default and 5% of the banks don't calculate probability of default. But, 45% of the banks said that their studies which was related to calculating probability of default were still going on.

Figure 4 : Calculating of Credit Risk Measurement Inputs



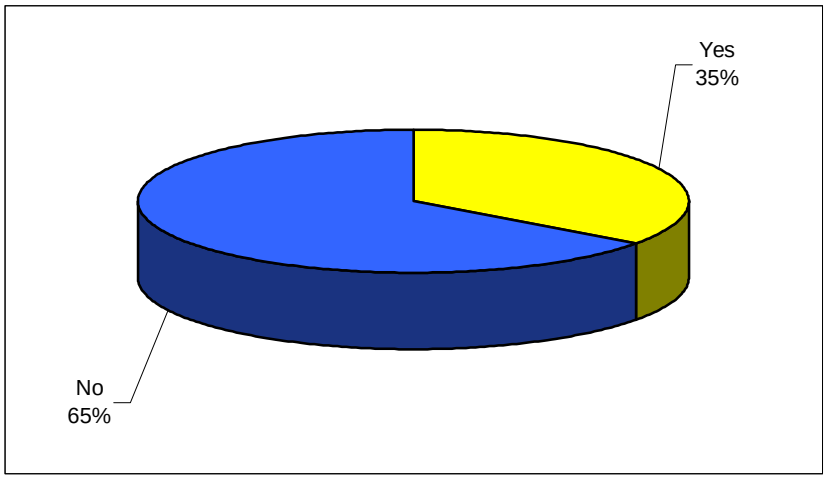
Recovery rate (RR) and default correlation (DC) are another inputs which are used in credit risk measurement. 55% of the banks calculate recovery rate and 45% of the banks' studies with respect to calculating recovery rate are going on. When half of the banks calculate probability of default and recovery rate, only 16% of the banks calculate default correlation. 26% of the banks said that they didn't calculate default correlation between borrowers and 58% of the banks said that their studies for calculating default correlation were still going on. Results of three questions which are related to inputs that are used in credit risk measurement are shown in Figure 4.

4.4. Quantitative Measurement of Credit Risk

There are three main quantitative credit risk measures. These are expected loss (EL), unexpected loss (UL) and credit value-at-risk (CVaR). Although these credit risk measures are used for measuring credit risk of one asset, particularly they are used for measuring portfolio credit risk. Only 35% of the banks said that they measured credit risk using these credit risk

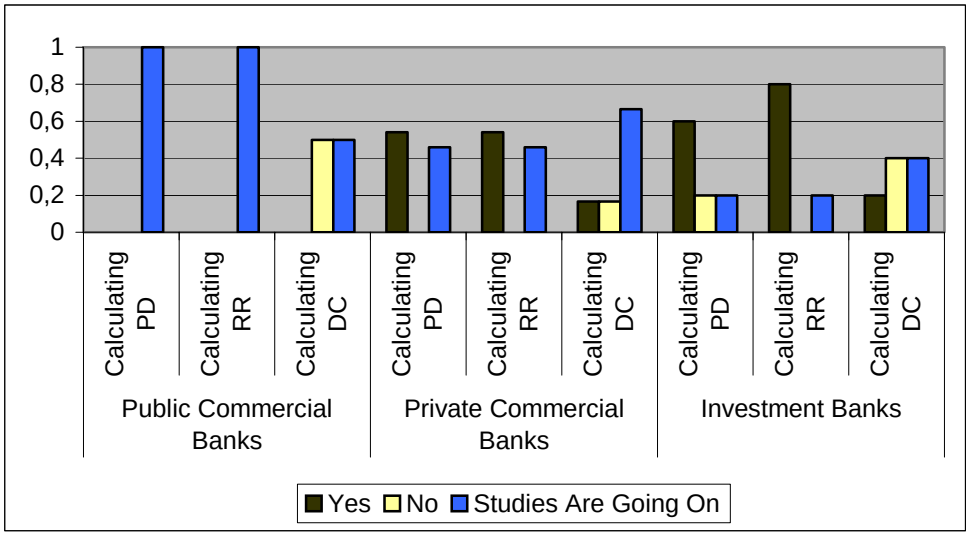
measures. 65% of the banks said that they didn't measure credit risk using EL, UL and CVaR as seen in Figure 5.

Figure 5 : Measurement of Credit Risk



The banks which calculate probability of default, recovery rate and default correlation are shown in Figure 6 according to the bank types. None of the public commercial banks calculate probability of default, recovery rate and default correlation.

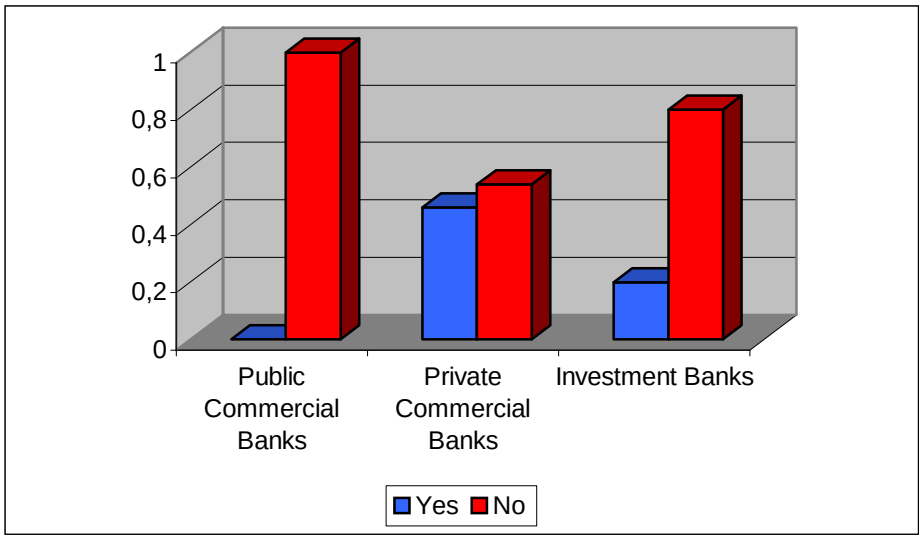
Figure 6 : Calculating of Inputs According to The Bank Tpyes



Measurement of credit risk by EL, UL or CvaR are shown in Figure 7 according to the bank types. When none of the public commercial banks calculate credit risk, 46% of the private

commercial banks and 20% of the investment banks calculate credit risk using with quantitative credit risk measures.

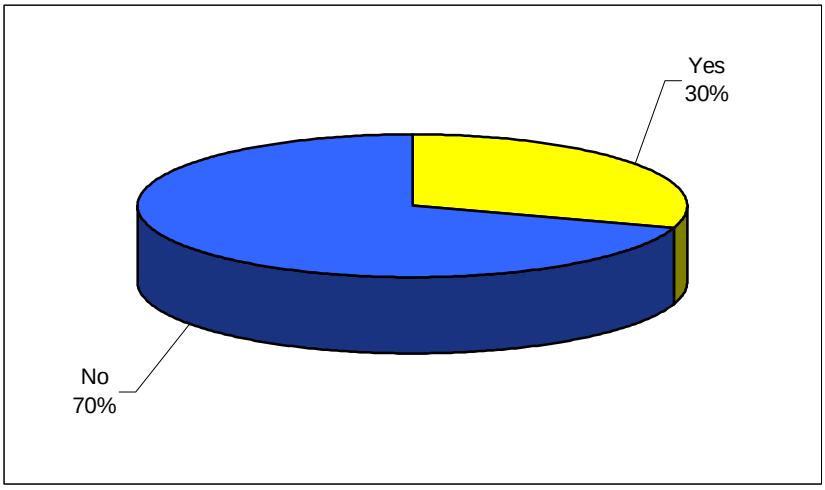
Figure 7 : Measurement of Credit Risk According to The Bank Tpyes



4.5. Using of Portfolio Credit Risk Model/Software

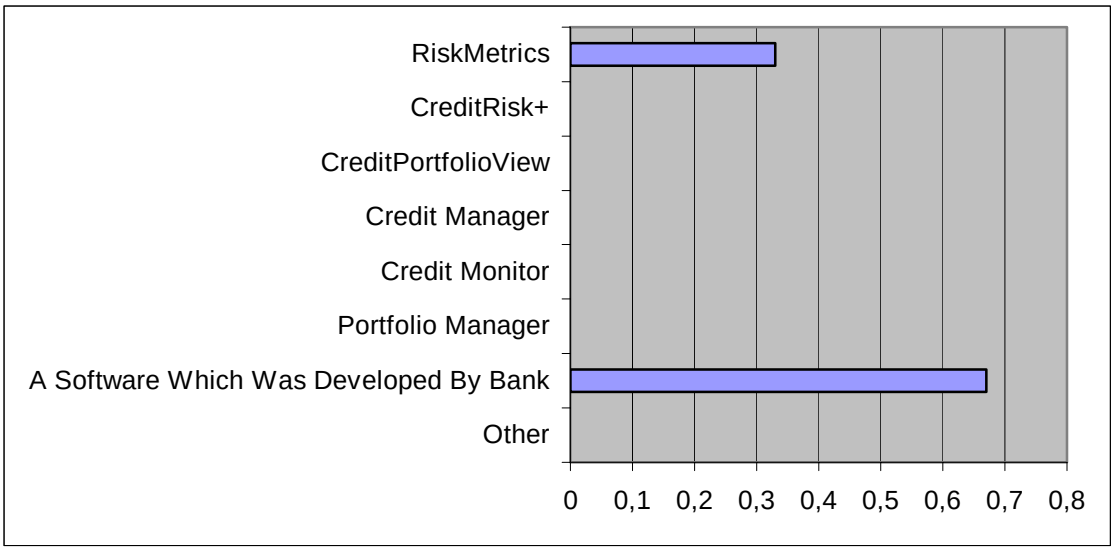
30% of the banks said that they measured credit risk using with a portfolio credit risk model and software as seen in Figure 8. 70% of the banks don't use a portfolio credit risk model/software.

Figure 8 : Measurement of Credit Risk Using With Portfolio Credit Risk Model/Software



Type of portfolio credit risk models/softwares which are used by banks are shown in Figure 9. 67% of the banks which use a portfolio credit risk model/software said that they used a model/software which was developed by themselves and 33% of the banks said that they used RiskMetrics.

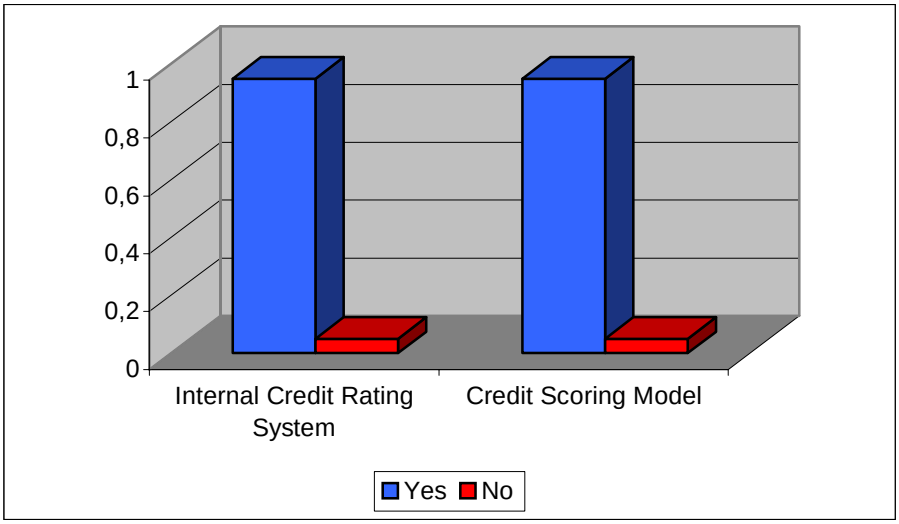
Figure 9 : Types of Portfolio Credit Risk Model/Software



4.6. Using of Internal Credit Rating System and Credit Scoring Model

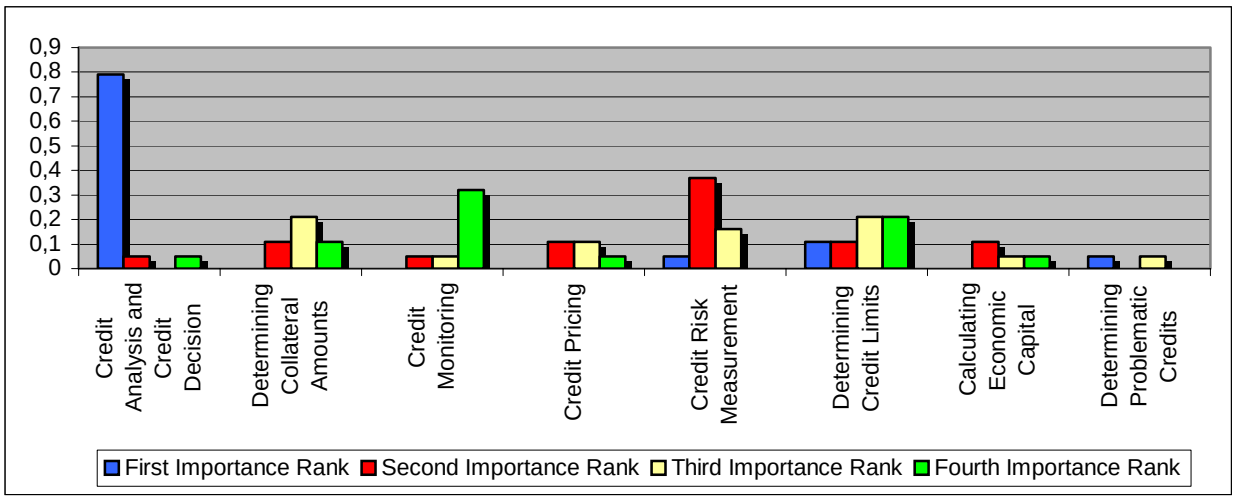
Banks usually use an internal credit rating system and/or a credit scoring model. Results of the survey verify this situation as seen in Figure 10. 95% of the banks said that they used an internal credit rating system and a credit scoring model in credit risk analysis and credit risk measurement.

Figure 10 : Using of Internal Credit Rating System and/or Credit Scoring Model



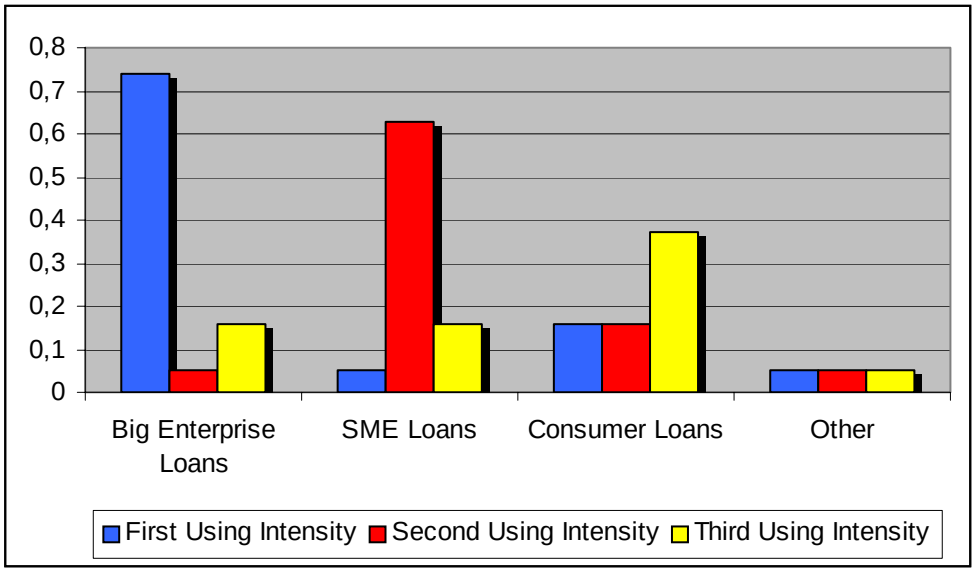
The banks use the internal credit rating systems and credit scoring models for various purposes. Using objectives or using fields in order of importance rank are shown in Figure 11. In the first importance rank, 79% of the banks said that they used the internal credit rating system and/or credit scoring model for credit analysis and credit decision, 11% of the banks said that they used them for determining credit limits, 5% of the banks said that they used them for credit risk measurement and 5% of the banks said that they used them for determining problematic credits. In the second importance rank, 37% of the banks said that they used them for credit risk measurement, 11% of the banks said that they used them for determining credit limits, calculating economic capital, credit pricing and determining collateral amounts. In the third importance rank, 21% of the banks said that they used them for determining credit limits and collateral amounts, 16% of the banks said that they used them for credit risk measurement and 11% of the banks said that they used them for credit pricing. In the fourth importance rank, 32% of the banks said that they used them for credit monitoring, 21% of the banks said that they used them for determining credit limits, 11% of the banks said that they used them for determining collateral amounts and 6% of the banks said that they used them for credit pricing. In brief, Turkish banks gererally use the the internal credit rating systems and/or credit scoring models for credit analysis and credit decision, credit risk measurement, determining credit limits and determining collateral amounts.

Figure 11 : Using Objectives of Internal Credit Rating System and/or Credit Scoring Model in Order of Importance



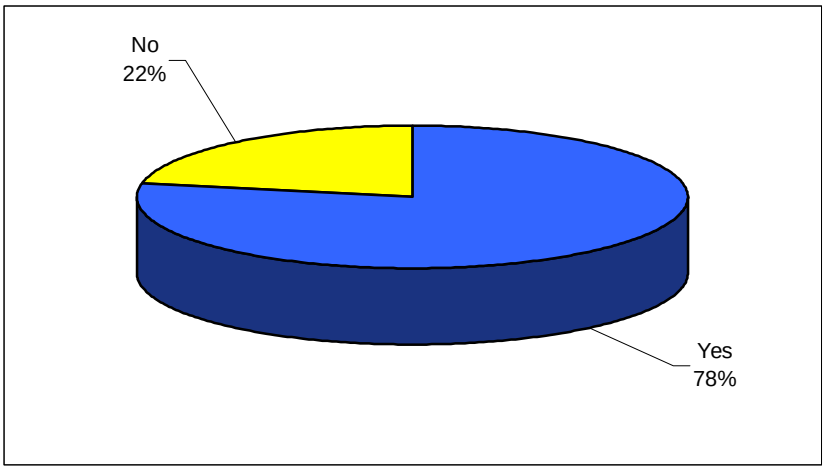
Applying of the internal credit rating system and/or credit scoring model to which loans are shown in Figure 12. According to the first using intensity, 74% of the banks said that they applied the internal credit rating system and/or credit scoring model to big sized enterprise loans, 16% of the banks said that they applied them to consumer loans and 5% of the banks said that they applied them to small and medium sized enterprise (SME) loans. SME loans (63%), consumer loans (16%) and big sized enterprise loans are the loans which the internal credit rating system and/or credit scoring model were applied according to the second using intensity. According to using intensity, in the third rank, there are consumer loans (37%), big sized enterprises loans (%16) and SME loans (16%). The banks which marked “other” option said that they apply them to bank loans (first using intensity), agricultural loans (second using intensity) and investment/project loans (third using intensity).

Figure 12 : The Loans Which Internal Credit Rating System and/or Credit Scoring Model Are Applied



78% of the banks said that the internal credit rating system and/or credit scoring model which they used were suitable for Basel II (new "Capital Accord") and 22% of the banks said that the internal credit rating system and/or credit scoring model were unsuitable for Basel II as seen in Figure 13.

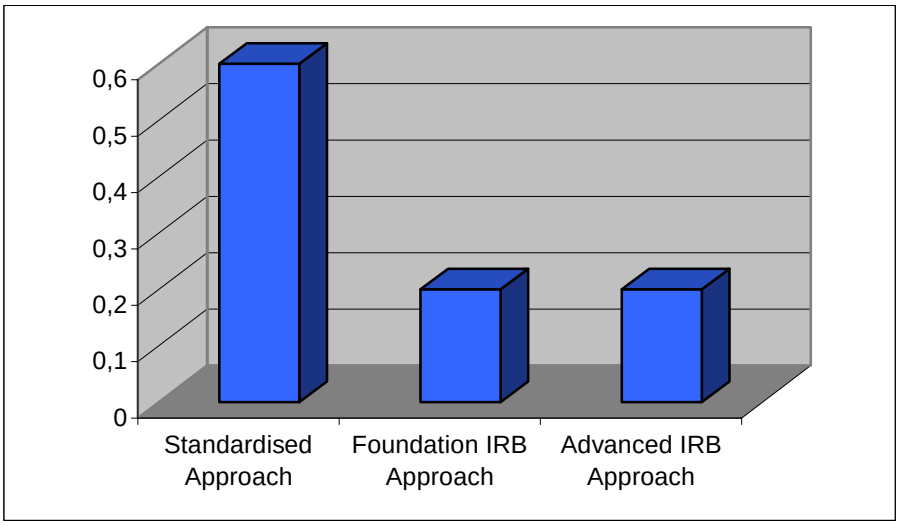
Figure 13 : Suitability of Internal Credit Rating System and/or Credit Scoring Model to Basel II



4.7. Using of Credit Risk Measurement Approaches According to The Basel II

There are three approaches in Basel II for credit risk measurement. These are standardised approach (SA), foundation internal ratings based approach (FIRBA) and advanced internal ratings based approach (AIRBA). 60% of the banks said that they would use standardised approach, 20% of the banks said that they would use FIRBA and 20% of the banks said that they would use AIRBA in the scope of Basel II. The credit risk measurement approaches that Turkish banks plan to use when Basel II will start to apply in Turkey are shown in Figure 14.

Figure 14 : Credit Risk Measurement Approaches

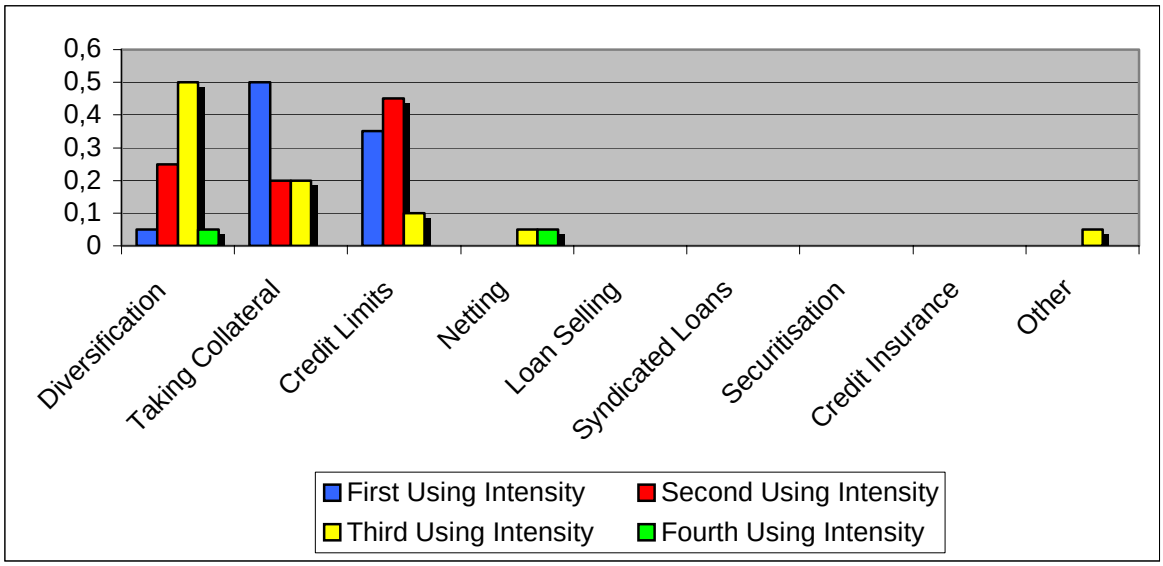


4.8. Credit Risk Management Tools

In credit risk management banks use various methods such as credit limits, taking collateral, diversification, loan selling, syndicated loans, credit insurance and securitisation. In Turkey, the methods which the banks use according to the using intensity are shown in Figure 15. According to the first using intensity, 50% of the banks said that they used taking collateral method, 35% of the banks said that they used credit limits and 5% of the banks said that they used diversification in credit risk management. In the second using intensity, credit limits (45%), diversification (25%) and taking collateral (20%) are the methods which are used by the banks in credit risk management. In the third using intensity, deiversification (50%), taking collateral (20%), credit limits (10%) and netting (5%) are used by the banks. The banks which marked "other" option said that they used reinsurance method in the third rank. In the fourth using intensity, diversification (5%) and netting (5%) are used. As seen Figure 15, the banks don't use the methods such as loan selling, syndicated loans, securitisation and credit insurance because

these products' markets haven't developed enough in Turkey. The banks mostly use taking collateral, credit limits and diversification.

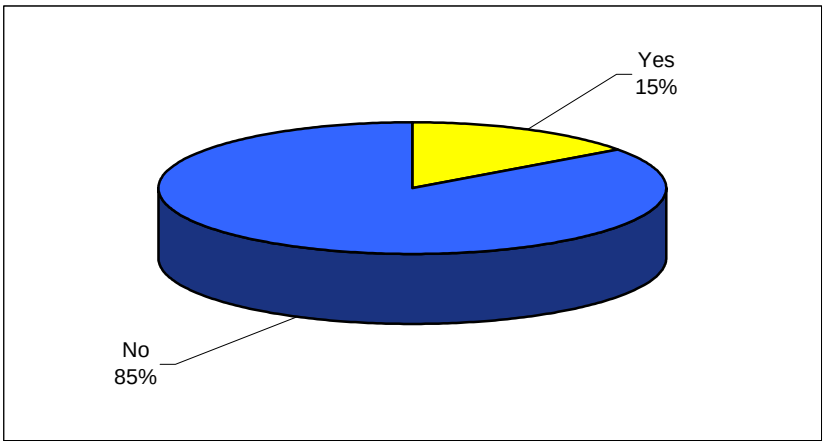
Figure 15 : Credit Risk Management Tools



4.9. Using of Credit Derivatives

Banks have begun to use credit derivatives for mitigating and eliminating credit risk in recent years. Credit derivatives whether are used or not by Turkish banks are shown in Figure 16. 15% of the banks said that they used credit derivatives and 85% of the banks said that they didn't use credit derivatives. Credit derivatives market hasn't developed in Turkey so the banks use credit derivatives through the foreign credit derivatives markets.

Figure 16 : Using of Credit Derivatives



CONCLUSION

In Turkey, the banks have considered risk management more important after 2001 crise. Also, Banking Regulation and Supervision Agency (BRSA) made some regulations about risk management. But, credit risk management are not to be in desired level and there are some shortcomings and problems in credit risk management. Lack of sufficient data about credit risk measurement inputs is one of these problems. When half of the banks calculate probability of default and recovery rate, only 16% of the banks calculate default correlation. Therefore, 35% of the banks measure credit risk using quantitative credit risk measures like expected loss, unexpected loss or credit value-at-risk. The banks generally use an internal credit rating system and/or a credit scoring model in credit risk analysis and credit risk measurement. The banks should accelerate their studies and preparations which are related to data about borrowers and loans that are used in credit risk measurement. Especially the banks that want to use internal ratings based approaches when Basel II is started to apply in Turkey should complete thier preparations and constitute historical data until 2008 because BRSA plan to apply Basel II in the Turkish banking sector in 2008.

The tools which are used in credit risk management by Turkish banks are taking collateral, credit limits and diversification. The banks don't use the other methods like loan selling, securitisation, credit insurance for mitigating and transferring credit risk. Because loan selling market, securitisation market or credit insurance sector haven't developed yet. But, there isn't any legal barrier in front of using these financial instruments. Also the banks use these instruments through foreign financial markets. For example, although credit derivatives market hasn't developed in Turkey, a small portion of the banks use credit derivatives through foreign credit derivatives markets.

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